

By Tom Farmer

# A STEM Brainstorm at NASA

LEADING EDUCATORS  
TOSS AROUND IDEAS  
FOR ATTRACTING  
TOP STUDENTS INTO  
SCIENCE, TECHNOLOGY,  
ENGINEERING AND  
MATH FIELDS

**// I WANNA BE AN ASTRONAUT WHEN I GROW UP** was a common refrain from children in the 1970s, 80s and 90s, and it might have given the U.S. space program leaders a false sense of security that an endless line of well-qualified workers would be waiting outside their door for years to come. The reality has been that not enough students have chosen science, technology, engineering or math (STEM) tracks in college, so it's more difficult to find the necessary engineers, chemists, programmers and pilots required to propel the space program to new heights.

However, there's good news. NASA is now well aware of the problem and has begun taking steps to remedy the situation. In conjunction with the October 2007 launching of Space Shuttle Discovery, NASA hosted an educational forum titled "Attracting Top-Performing Students to STEM Education Programs and Careers."

Fifty leading educators, students and corporate officials from across the United States were brought together for the event, including executives from Yahoo and eBay and educators from Stanford, MIT, Purdue and other universities. The goal was to discuss strategies to inspire future generations of explorers and innovators. Noted engineering advocate and author Celeste Baine also participated in the event. Since she was a child, she had viewed space exploration as somewhat of a mystery.

"It didn't seem real," Baine said. "I watched launches and it was interesting, but I never had enough information about it. I thought you had to be an aerospace engineer. Now, I see they're hiring bio-medical engineers, mechanical engineers, industrial engineers. There are thousands and thousands of engineers working for NASA." Baine is personally addressing one of the most glaring needs by writing a NASA career guide, and she plans to incorporate more references to NASA in her "Engineers Can Do Anything" presentation and other educational programs she presents in schools across the country.

## NASA Experience

The day before the forum, participants enjoyed a tour of Kennedy Space Center and the International Space Station exhibit in Florida. Equivalent in size to three football fields, the space station is composed of nodes, some of which Baine found fascinating in the exhibit. "I was thinking how interesting it would be to be an engineer who develops these things for a weightless environment. You could put controls on the ceiling, put things everywhere," she said. "Even the beds were vertical. Astronauts have to be strapped in to sleep." Another thought occurred to Baine as she toured the facilities and the launch pad.

"What blew my mind is that this technology was available back in the 60s. Why haven't we done more with it?" she said. "We had people walking on the moon so long ago, and we haven't

come too far since then. Think of all that we can accomplish today with so many advances in technology!"

## Educational Forum on STEM

NASA has its own education department and offers programs and materials for teachers, but career information is scarce, Baine says. "There are bookmarks for engineering, but it's not anything that's compelling. You've got to make students feel like they could be a part of it."

Forum members divided into groups and brainstormed ways top students could be persuaded to choose STEM-related careers. Among the ideas were summer programs and camps, competitions, more career strands, student tours of NASA sites, astronauts in the classroom, and better videos touting careers.

"I remember being stunned by what the kids had to say," Baine noted. "They

gave a different perspective. A girl talked about how she was interested in space and had gotten to the point where she was making her teacher mad because she knew so much more than the teacher about living in a weightless environment. She really needed a mentor and couldn't find anyone to help her go to the next level."

## In the future

NASA isn't the only entity noticing students' lack of interest in STEM careers. Baine says 38 states are considering adding engineering to their education standards, just as a few other states already have done. "I'm so happy to see that it's happening," she said. "Six states have been on board for quite some time." Another way to get students interested in careers at NASA is to show them firsthand what's involved. "They should

find more ways to give high school kids internships at NASA, have students work with the space program," Baine said. "We need students more involved at a younger age."

And more attention must be focused on top students—the cream of the crop. "How do we nurture them? That's a big question. The school systems tend to teach to the middle," Baine said.

Forum leaders planned to compile the group's findings, issue a report, and remain in contact with participants to keep ideas flowing for ways to stimulate student interest in STEM. **E**

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